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### **(54) DIRECTION AND POSITION CONTROL METHOD AND DEVICE FOR TUNNEL ROBOT**

(57) Abstract:

**PURPOSE:** To correct a route by measuring a position deviation of an underground propulsion robot to be input to a direction and position control device, and feedbacking a head angle computed according to a designated calculation expression by adding a disturbance factor and a measured noise thereto.

**CONSTITUTION:** At the time of controlling the direction and position of a small bore robot propelled under the ground to construct a non-removed earth pipe line, a position deviation from a planned advancing line is measured from a pressure difference between a pressure sensor in the robot and a pressure sensor on the ground. The measured value is inputted to an acemole dynamics 1 of a control device A to compute a head angle  $\theta_h$  according to a designated calculation expression. A transition noise produced by soil property change and the like is added to an

adder 5 of the input end of the acemole dynamics 1, and an observation noise at the time of measurement is added to an adder 6 of the output end. The current head angle  $\theta_h$  and a position deviation  $D$  from a planned advancing line estimated at the preceding time are taken in an arithmetic device 4 just before the adder 5 and just after the adder 6 to compute a new head angle  $\theta_h$  according to a designated calculation expression to feedback the head angle to the robot main body, thereby changing the route.

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